

END-EFFECTORS AND TRANSFER DEVICES FOR HANDLING MICROELECTRONIC
WORKPIECES

ABSTRACT OF THE DISCLOSURE

Passive end-effectors for handling microelectronic workpieces having a perimeter edge circumscribing a first diameter. In one embodiment, a passive end-effector in accordance with the invention includes a body having a plurality of contact sites located along a circle corresponding to the first diameter of the workpiece. The body, for example, can be a paddle or a fork. The passive end-effector can also include a plurality of passive abutments that are carried by the body. The abutments are located along the circle, and the abutments are configured to support the workpiece in a plane spaced apart from the body. The abutments, for example, can each include an inclined surface that slopes downwardly toward a central region of the circle to support only the edge of the workpiece in a manner that suspends or otherwise spaces the workpiece in a plane that is spaced apart from the body. The passive end-effector can further include a sensor assembly that is carried by the body. The sensor includes an engagement member positioned at least partially within the circle, and the engagement member is configured to move generally transverse to the plane as the workpiece is loaded on and unloaded from the end-effector. The passive end-effector does not include an active member that exerts a force against the edge of the workpiece parallel to the plane of the workpiece.